

Name: _____

Date: _____

Calculus: Review for Q3 Exam 3

Mr. Callahan

This review sheet is not comprehensive. Be sure to study your old tests, notes, and homework as well!

1. A pile of sand in the shape of a cone whose radius is twice its height is growing at a rate of $5 \text{ m}^3/\text{sec}$. How fast is its height increasing when the diameter is 40 meters?

2. Evaluate: $\int (-2x^{-3} + 20x^{-5})dx$

3. Evaluate: $\int \left(\frac{-14x^{5/2}}{2} \right) dx$

4. Evaluate: $\int \left(\frac{-5\sqrt[3]{x^2}}{3} \right) dx$

5. Evaluate: $\int_{-1}^3 (-x^3 + 3x^2 + 1)dx$

6. Evaluate: $\int_{-3}^0 (4\sqrt[3]{x})dx$

7. Given $\frac{dy}{dx} = \frac{6x^2 - 2x^3}{x}$ and $y(1) = 4$ find y .

8. If $f'(x) = 3x^2 - 8x + 1$ and $f(1) = 4$, find $f(x)$.

9. If $f''(x) = 6x^2 - 12x + 2$, $f'(1) = -3$, and $f(-2) = 1$, find $f(x)$.

10. Consider a conical tank whose radius at the top is 4 feet and whose depth is 10 feet. The tank is being filled with water at a rate of $2 \text{ ft}^3/\text{min}$. How fast is the water level rising when the depth of the water is 5 feet?

